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AUTHOR Papini, Dennis R.; Sebby, Rickard A.
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ABSTRACT

This study investigates changing family relationships during adolescence using a dialectical view of the family. Fifty-one families responded to an assessment battery that measured affective relations between parents and their adolescent children. Measures included the Transition into Adolescence Survey; the Interactive Behavior Questionnaire; the Parental Control Questionnaire; the Decision-Making Questionnaire; and the Issues Checklist. Families were classified into prepubertal, transpubertal, or postpubertal groups according to their modal response on Tanner's (1962) physical status criteria. A stepwise discriminant analysis was performed to identify measures that maximize between groups differences. Based on that analysis, a correct classification rate of 70 percent was achieved. A multiple discriminant analysis was then performed to determine if these groups could be classified based upon their resposes to the entire assessment battery. Based on this analysis, a correct classification rate of 86 percent was achieved. The two significant discriminant functions that emerged indicate that changes in family relationships are related to the transformation of mother-adolescent and father-adolescent relations. These results are discussed with respect to the dimensionalization of change in the affective nature of family relations during adolescence. (Author/RH)

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Multivariate Assessment of Adolescent Physical Maturation as a Source of Change in Family Relations[1]

Dennis R. Papini, Ph.D. and Rickard A. Sebby, Ph.D.[2]

Southeast Missouri State University

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ABSTRACT

A dialectical view of the family was adopted for the investigation of changing family relationships during adolescence. Fifty-one families responded to an assessment battery designed to measure affective relations between parents and their adolescent children. Families were classified into prepubertal, transpubertal, or postpubertal groups according to their modal response on Tanner's (1962) physical status criteria. A Stepwise Discriminant Analysis was performed to identify measures that maximize between groups differences. Based on this analysis, a correct classification rate of 70% was achieved. A Multiple Discriminant Analysis was then performed to determine if these groups could be classified based upon their responses to the entire assessment battery. Based on this analysis, a correct classification rate of 86% was achieved. The two significant discriminant functions that emerged indicate that changes in family relationships are related to the transformation of mother-adolescent and father-adolescent relations. These results are discussed with respect to the dimensionalization of change in the affective nature of family relations during adolescence.

A Multivariate Assessment of Adolescent Physical Maturation as a Source of Change in Family Relations

Family relations change across the life-span, and much of this change may be attributable to individual development among family members (Lerner and Spanier, 1978). This dialectical orientation leads to the assumption that the family context influences, and is influenced by the development of the individual. This family dialectic is illustrated in a report from the Committee on Adolescence for the Group for the Advancement of Psychiatry (1968) which contends that adolescence begins with the adolescents "attainment of separation and independence from the parents" and ends with "a return to the parents in a new relationship based upon relative equality" (p. 93-94). Old styles of relating to parents are invariably replaced by new styles, perhaps incorporating some features of the old relations but at a qualitatively different level. Relationships characterized by the adolescents emotional dependence on parents are transformed into equitable relations between parent and young adult. In turn this newer style of relating to parents will be replaced as parents enter old age and children enter middle adulthood. A basic premise of this paper is that the antecedents of changing family relations during adolescence are likely to be associated with the individual developmental characteristics of adolescents.

Petersen and Taylor (1980) have proposed a biopsychosocial model of adolescence that reflects the breadth of change that occurs at this developmental period. At no time during the

course of development, except during infancy, are physical changes more evident than in the child's transition into adolescence. And yet the physical changes induced by the onset of puberty have little meaning outside of the social contexts provided by the family (Hill, 1980) and peer group (Savin-Williams, 1979), or the personal contexts constructed through the processes of individuation (Blos, 1979; Erikson, 1968) and cognitive development (Labouvie-Vief, 1984). Changing patterns of family relations during adolescence may, in part, be related to the physical maturation of adolescents. The observation of physical development during adolescence may set the occasion for the family to redefine interpersonal relations, transforming old styles of relating to one another into qualitatively newer styles.

Empirical work devoted to the investigation of family relations during adolescence has been conducted from two major perspectives, the psychosocial and the biosocial. Collectively this research provides the basis for a descriptive investigation of family relations aimed at the identification of adolescent developmental characteristics associated with changing patterns of family relationships.

The psychosocial approach to the study of family relations during adolescence examines the interface between the psychological process of adolescent individuation and the social process of family interaction (ex. Hauser, Powers, Noam, Jacobson, Weiss, & Follansbee, 1984; Siegel, 1982). Adolescent individuation has traditionally been described as a

separation-individuation process in which the adolescent divests him/herself from family ties at the onset of puberty in order to establish mature psycho-sexual genitality with peers (Blos, 1962). The onset of puberty is assumed to signal the beginning of the separation-individuation process. The nature of the separation-individuation process is thought to be conflictual, and family relations are often characterized by instances of stress and turmoil (A. Freud, 1968). Stated more accurately, the overt physical changes associated with the onset of puberty may be an antecedent for changing family ties and peer relations (Hunter, 1984).

This traditional description has been challenged by current researchers who contend that adolescent individuation does not necessarily mandate interpersonal separation between family members nor conflictual relations with parents (Bell and Bell, 1982; Cooper, Grotevant, and Condon, 1983; Powers, Hauser, Schwartz, Noam, and Jacobson, 1983). Rather than describing adolescent individuation as a process requiring separation, these authors emphasize the adolescent's embeddedness in the family and the importance of a supportive family context for subsequent growth and development.

Bell and Bell (1982) stress the role of interactive communication between parents and their adolescents as an important source of the adolescents' construction of an adaptive self. In short, parent-adolescent relationships provide a validating context that contributes to self individuation through the development of differentiated self awareness and more

accurate perceptions of interpersonal relations. Cooper et al. (1983) view adolescent individuation as a product of the mutual construction of a common point of view during parent-adolescent interactions. Adolescent individuation is viewed as a dialectic between total individuality from the family and total enmeshment within the family. The synthesis of these opposites results in an individuated adolescent who can simultaneously declare separateness from parents and acknowledge connectedness to them. These authors found that supportive patterns of family interaction were related to adolescent individuation such that these adolescents were able to develop their own point of view and express differences of opinion, while also remaining open to others' ideas and being sensitive to others' feelings.

Powers et al (1983) reported that the incidence of supportive interactions during family discussion is related to adolescent ego development. Ego development has traditionally been viewed as a process through which adolescent interactions become more complex and differentiated (Loevinger, 1976). As in their earlier research (eg. Hauser, 1978), these authors found that stages of adolescent ego development reflecting differing levels of maturity, are associated with general interaction patterns. Specifically, the preconformist exhibits exploitive or dependent styles of interpersonal interaction, the interactional style of the conformist is directed towards gaining acceptance from others, and the interactions of adolescents manifesting a postconformist level of ego development are characterized by mutuality, empathy, and the ability to assimilate individual

differences of opinion. Examined collectively (Youniss, 1983), parent-adolescent research conducted from the psychosocial perspective illustrates the potential importance of the psychological context provided by adolescent individuation for the mutual construction of relationships among family members.

The biosocial perspective examines the interface between the biological process of adolescent physical maturation and the social process of family relations (Steinberg, 1981; Steinberg and Hill, 1978; Papini and Datan, 1983). Steinberg and Hill have conducted longitudinal and cross-sectional research that described the influence of overt physical changes in adolescent males on patterns of family interaction. In general, these studies reveal a pattern of increasing conflict between adolescents and their parents during the early half of the pubertal growth cycle, especially with mothers. Associated with this increased conflict is a pattern of decreased explanation between family members during the early half of the pubertal growth cycle. Family relations appear to be redefined and transformed into newer styles of relating to one another as the adolescent matures physically. This transformation of family relations is accomplished through reciprocal interactions between the family members such that; a) the mother comes to exert less control over the adolescent as he physically matures, b) the adolescent tolerates less maternal control with increased physical maturity and, c) the father appears to become more influential with the adolescent as physical maturation progresses. Thus, these authors provide evidence that can be

interpreted to suggest that adolescent autonomy reflects a transformation of preadolescent family relations, and this transformation appears to occur at the expense of the mothers sphere of influence.

Papini and Datan (1983) investigated changing patterns of family interaction in relation to adolescent physical status. These authors found that conflict between family members was unrelated to the physical status of the adolescent. However, these researchers did find that families with adolescents in the middle of the pubertal growth spurt exhibited significantly fewer instances of positive supportive statements during family interaction than did prepubertal and postpubertal families. The general pattern of results generated in this study are consistent with those of Steinberg and Hill, and provide support for a dialectical view of family relations during adolescence. Adolescent physical maturation is associated with a transformation of prepubertal family relations during the apex of the pubertal growth spurt. The postpubertal style of family relations incorporates many of the features of prepubertal relations, but are based on greater equality between family members and may, therefore, be qualitatively different.

The available empirical research yields both consistencies and inconsistencies in the family relations during adolescence literature. The consistency in all of this work is that individual developmental characteristic such as ego status, individuation, and physical status are associated with changing patterns of family relations. However, with respect to changes

in family relations during adolescent physical maturation there is some question about the affective nature of these changes. One reason for an inconsistent emphasis on conflictual versus supportive family contexts during adolescence is because previous research has failed to adequately dimensionalize family relations, and have relied on univariate process and content measures of family conflict. Research is needed that will clarify the nature of family relations during adolescent physical maturation.

Prinz, Foster, Kent, and O'Leary (1979) provide a useful approach to the study of affective family relations during adolescence. These authors adopted a multivariate strategy for the identification of mother-adolescent dyads based on clinical distress. They developed a battery of assessment instruments designed to measure the affective quality of the relationships between family members. The purpose of this study is to further describe the nature of changing family relations during adolescence, and a similar strategy has been adopted. Can families with adolescents at different levels of physical maturity be identified on the basis of affective family relationships? In addition, how do relationships differ across families having physically different adolescents? Answers to these questions should provide greater clarification of the family dialectic during adolescence.

Method

Subjects. Class rosters containing parental names, addresses, and phone numbers were obtained for all seventh grade

students enrolled in the public school system of a small midwestern community. This sample was composed of 300 families with children between the ages of 13 and 14. This age range corresponds to the period of adolescence when the greatest variability in physical maturation is present (Tanner, 1962). Those families with early adolescent children were contacted over the telephone by trained research assistants and informed that their family had been selected to participate in this research project. Each family was mailed a packet of materials containing a consent form, a battery of assessment instruments, and a return envelope with postage. The assessment battery contained in these packets required approximately one hour per family member to complete. Fifty-one families completed and returned the packets, constituting a 17% return rate. Follow-up telephone calls revealed that the overriding factor associated with a family's decision for non-participation was lack of time by working parents.

Based upon each family's modal response to a checklist consisting of Tanner's (1962) physical maturity criteria, the 51 families were assigned to prepubertal, transpubertal, or postpubertal groups. In general, the prepubertal child has not yet experienced the physical changes brought about by the onset of puberty. The transpubertal adolescent is in the midst of the physical changes associated with puberty. In contrast, the postpubertal adolescent has nearly completed the physical changes of puberty. The family's modal response was selected to allow for a single classification of a family based upon this

qualitative dimension. There was, in most cases, complete agreements between mothers, fathers, and adolescents in the assessment of adolescent physical status.

Demographic information obtained from family members regarding age, education, occupation, and marital status indicated that all of the families were comparable. On the average both parents were in their mid-thirties, had some credit toward a college degree, tended to work on either a full or part-time basis, and were in their first marriage. Adolescent family members were uniformly found to be 13 years of age (only one exception was noted). The number of families with male or female adolescents in the prepubertal, transpubertal, and postpubertal classification groups is presented in Table 1.

Insert Table 1 About Here

Instruments. Each instrument was designed to assess different dimensions of a family's expressive relationship. Table 2 presents the variables that were measured, the source of each variable measured, and the instrument from which the variable was derived. These measured were developed

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Insert Table 2 About Here

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and validated by Prinz, et al. (1979).

A. Transition into Adolescence Survey (TIAS). The TIAS yields demographic information about the family, and includes a checklist of adolescent maturational characteristics to be completed by each family member. The checklist is based upon Tanner stages (Tanner, 1962) and allows for the classification of families based upon adolescent physical maturation into pre-, trans-, and postpubertal stages. Previous research by Duke, Litt, and Gross (1980) has shown that adolescent self-assessments of physical and sexual maturation are similar to those obtained by physicians using Tanner stage criteria.

B. Interactive Behavior Questionnaire (IBQ). For each family member the IBQ provides two types of information: (a) relative dissatisfaction with another's behavior (either a parent's or an adolescent's) and (b) an evaluation of the interactions between the parent and the adolescent.

C. Parental Control Questionnaire (PCQ). For each family member the PCQ yeided a score reflecting the parent's perceived degree of control over the behavior of the adolescent. In addition, scores reflecting the adolescent's desire for and disssatisfaction with each parent's degree of control were obtained.

D. Decision-Making Questionnaire (DMQ). For parents, the DMQ yielded scores which generally reflected who made decisions in the family. Adolescent's scores represented their dissatisfaction with the decision-making process in the home.

E. Issues Checklist (IC). The IC yielded three scores for each family member reflecting the quantity, intensity, and

quantity by intensity of the issues encountered in family relationships.

Results

A stepwise multivariate discriminant analysis was performed on the 30 variables derived from the IBQ, PCQ, DMQ, and the IC. The classification variable was each family's modal response on the TIAS instrument. Due to the fact that group sizes were grossly different (see Table 1) the apriori probabilities of group membership were adjusted by the actual group sizes (Dillon & Goldstein, 1984). Based upon the satisfaction of an F-to-enter criterion of 1.25, four variables remained in the discriminant equation. Two significant discriminant functions were indicated, Wilk's lambda$_1$ =.61. Chi-Square (8) = 22.33, p. <.01; Wilk's lambda$_2$ =.80, Chi-Square (8) = 9.85, p. <.02. Figure 1 presents a plot of the group centroids along with univariate F tests of centroid differences. In each comparison of the group centroids, a significant difference was found. This pattern of results indicates that the discriminant analysis did significantly separate the pre-, trans-, and postpubertal groups.

Insert Figure 1 About Here

The standard canonical discriminant function coefficients for each variable on each of the two discriminant functions and the associated group centroids are presented in Table 3.

Insert Table 3 About Here

Upon examination of these coefficients and the group means on each variable presented in Table 4, Function 1 appears to consist of the adolescent's perceived degree of fatherly control (PCQ), the father's degree of dissatisfaction with the adolescent's behavior (IBQ), and the adolescent's dissatisfaction with the decision-making process employed in the family (DMQ). As adolescents experience the effects of physical maturation,

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Insert Table 4 About Here

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especially during the transition phase, they became increasingly dissatisfied with family relationships. This dissatisfaction was also evident among fathers.

While Function 1 seemed to primarily reflect interactions between the father and the adolescent, Function 2 reflects interactions between the mother and the adolescent. This influence can be seen in the weight given to the mother's perceived loss of control over the adolescent's behavior (PCQ). Thus, as adolescents physically matured and interactions between the father and the adolescent became more of the focal point of the family's relationship, mothers perceived themselves as having less control. Based upon the discriminant functions obtained,

70% of the families were classified correctly. Thesse data are presented in Table 5. The discriminant classification resulting from the stepwise procedure had the most difficulty classifying families as prepubertal and postpubertal.

Insert Table 5 About Here

In an effort to ascertain whether the entire battery of instruments initially developed by Prinz, et al., (1979) and further elaborated in this study could be effectively used as an instrument capable of discriminating family relationships related to the effects of pubertal physical maturation, a further multivariate discriminant analysis was conducted which did not attempt to adjust the equation with respect to redundancy. All 30 variables were retained in the resulting analysis. The classification matrix depicted in Table 6 indicated that some gain was achieved (a 16% improvement in classification) but that the discrimination of prepubertal families was still

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Insert Table 6 About Here

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problematic. Obviously this poor performance was probably due to the small number of families in this particular group. As a follow-up sampling of the initial set of 300 families continues, this problem may be removed.

Discussion

The family dialectic is a process that emphasizes change, and views family development as a series of transformations and redefinitions of established styles of relating to one another into newer styles. This dialectical view is adopted explicitly by researchers examining family relations during adolescence from the psychosocial and biosocial perspectives.The major difference between these perspectives arises in the interpretation of the affective nature of the changes that characterize relations during adolescence. Psychosocially oriented research has been interpreted to suggest that adolescent development occurs in the supportive and positive context of the family. Biosocial research has been interpreted to suggest that family development is influenced by adolescent development, often resulting in increased conflict in parent-adolescent relations. The results of the current study can be interpreted to provide a synthesis of biosocial and psychosocial research on family relations during adolescence.

One of the problems with previous research is that family relations were inadequately dimensionalized, reflecting a univariate approach to the study of a phenomenon characterized by organized complexity. The dimensionalization of family relationships in the present study are embodied in the discriminant functions (see Table 3). In general, these discriminant functions reveal that differences between families during the process of adolescent physical maturation are the result of transformations and redefinitions of father-adolescent

and mother-adolescent relationships. The affective nature of these changing family relations are interpretable by consulting the means and standard deviations presented in Table 4. Specifically, the mother-adolescent relationship appears to have been redefined in prepubertal to transpubertal families, with mothers perceiving increasingly less control (PCQ-M) over the behavior of the adolescent. This finding is similar to those reported by Steinberg (1981; Steinberg & Hill, 1978) in that the redefinition of family relations appears to occur at the expense of the mother's sphere of influence and control over the behavior of adolescent children.

Father-adolescent relationships also appear to undergo redefinition and transformation across levels of adolescent physical maturation (see Table 4). These findings bear similarities to earlier work in that the role of the father appears to become increasingly more important during adolescence. Specifically, the father-adolescent relationship appears to change reciprocally. The father becomes increasingly dissatisfied with the adolescent's behavior as physical maturation proceeds (IBQ-F), while adolescents perceive the father as attempting to exert greater control over their behavior (PCQ-F-A), especially those in transpubertal families. However, these findings reveal that the affective nature of transitions infather-adolescent relationships is relative.

Changes in the affective valence of family relationships appear to be relative to earlier, or later stages of adolescent physical maturation. For example, adolescents in transpubertal

families report being more aware of the fathers controlling behavior than adolescents in pre- and post-pubertal families. This difference exists despite the fact that the greatest mean value on this measure (3.2) reflects the midpoint of the satisfaction-dissatisfaction continuum of the adolescent's concern about the father's controlling behavior. It is only in relation to pre- and postpubertal family scores on the PCQ_F-A that this measure is interpretable. Relative to adolescents in pre- and postpubertal families, adolescents in transpubertal families are most dissatisfied with increased controlling behavior by the father. A similar distinction has been made in earlier research (Papini & Datan, 1983), suggesting that the affective nature of transformations in family relations is not necessarily negative or conflictual.

Relative satisfaction with decision-making in the family also appears to vary across level of adolescent physical maturation. Adolescents in postpubertal and prepubertal families reported greater satisfaction with their role in the family decision-making process than did adolescents in transpubertal families. However, it is unlikely that the satisfaction for adolescents in pre- and postpubertal families are based on the same criteria. This finding does not imply that pre- and postpubertal adolescents are allowed to make decisions about the same family issues. Postpubertal adolescents may be included in decision-making about more mature issues simply by virtue of being more physically mature than their prepubertal counterpart. The transpubertal adolescent, caught in no man's land, may

possess the knowledge and interest to participate in decision making on selected topics, but may lack the physical appearance of a young man or lady and be excluded.

In summary, family relationships change during adolescence. This change is not random but is undoubtedly related to individual developmental changes. The general pattern of findings presented in this study conforms to those described by earlier researchers; relative satisfaction with family relationships decreases during transpuberty relative to prepuberty and postpuberty. It has been suggested that the differences observed between families across level of adolescent physical maturity are related to transformations of mother-adolescent and father-adolescent relations. A qualifier should be placed on the present findings. An examination of Table 1 reveals that the sample lacked sufficient variability in adolescent physical status to allow for the investigation of sex differences. Parent-daughter and parent-son relations have been lumped together without demonstrating that they are similar. Thus, it may be the case that the transformation of parent-daughter relations is qualitatively different from transformations in parent-son relations. However, the present findings are consistent with general patterns of family interaction reported in the literature, and may contribute to a clearer understanding of changing family relations during adolescence.

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Table 1

Number of Families Having Male or Female Adolescents in the Prepubertal, Transpubertal, Postpubertal Classification Groups

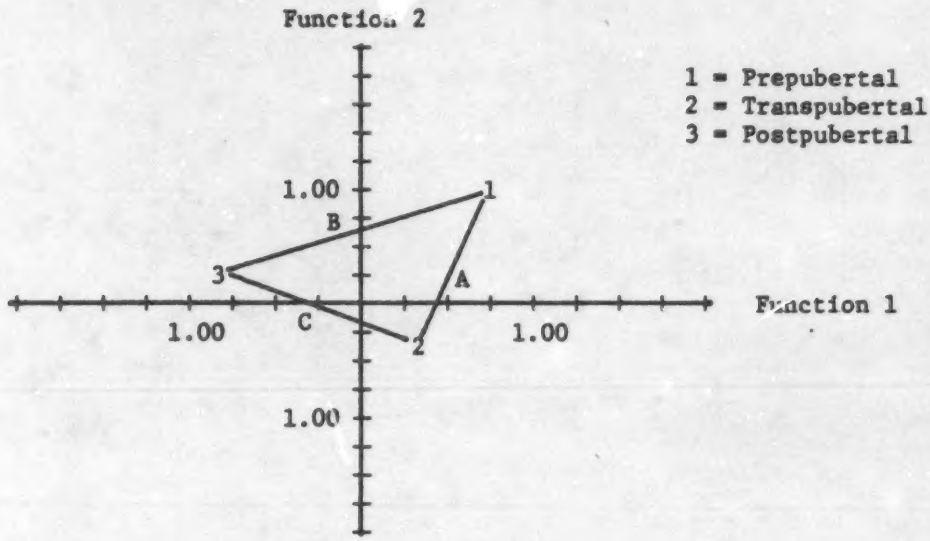
Adolescent Sex	Classification Group			
	Prepubertal	Transpubertal	Postpubertal	Total
Male	5	13	4	22
Female	1	17	11	29
Total	6	30	15	

TABLE 2

Variables by Family Source and Instrument
For the Multivariate Assessment of Family
Relationships During Adolescence

VARIABLE	FAMILY SOURCE	INSTRUMENT	
Perception of Adolescent Physical Status	Mother	Transition Into Adolescence Survey	(TIAS)
	Father		TIAS
	Adolescent		TIAS
	Experimenter		TIAS
Family Demographic Information	Experimenter		TIAS
Evaluation of Adolescent Behavior	Mother	Interactive Behavior Questionnaire	(IBQ)
	Father		IBQ
Evaluation of Parent-Adolescent Dyad	Mother		IBQ
	Father		IBQ
	Adolescent		IBQ
Evaluation of Maternal Behavior	Adolescent		IBQ
Evaluation of Paternal Behavior	Adolescent		IBQ
Degree of Maternal Control	Mother	Parental Control Questionnaire	(PCQ)
Degree of Paternal Control	Father		PCQ
Satisfaction with Maternal Control	Adolescent	Adolescent Control Questionnaire	(ACQ)
Satisfaction with Paternal Control	Adolescent		ACQ
Maternal Decision-Making	Mother	Decision-Making Questionnaire	(DMQ)
Paternal Decision-Making	Father		DMQ
Satisfaction with Parental Decision-Making	Adolescent		DMQ
Quantity of Issues	Mother	Issues Checklist	(IC)
	Father		IC
	Adolescent		IC
Intensity of Issues	Mother		IC
	Father		IC
	Adolescent		IC
Issues by Intensity and Quantity	Mother		IC
	Father		IC
	Adolescent		IC

Figure 1. Prepubertal, transpubertal, and postpubertal family centroids and significance of centroid differences.



Centroid Differences		F-Value	Significance
A	Pre and Trans	2.71	.05
B	Pre and Post	3.19	.02
C	Trans and Post	3.29	.01

Table 3

Standardized Discriminant Function Coefficients and Group Centroids for the Variables Selected in the Stepwise Procedure

	Standardized Coefficients	
Variable	Function 1	Function 2
Mother's Perceived Control over Adolescent's Behavior (PCQ-M)	.23	.94
Father's Dissatisfaction with Adolescent Behavior (IBQ-F)	-.93	-.03
Adolescent's Perception of the Degree of Control Exercised by the Father (PCQ-F-A)	.60	-.34
Adolescent's Dissatisfaction with the Family's Decision-Making Process (DMQ-A)	.48	-.47
Group Centroids		
Prepubertal	.69	1.14
Transpubertal	.27	-.33
Postpubertal	-.81	.18

Table 4

Means and Standard Deviations (in parentheses) of the Variables Selected in the Stepwise Procedure by Classification Group

	Classification Group		
Variable	Prepubertal	Transpubertal	Postpubertal
PCQ-M	4.50 (2.26)	2.90 (1.50)	3.01 (0.99)
IBQ-F	1.33 (1.97)	2.83 (3.06)	4.93 (4.43)
PCQ_F-A	2.60 (1.54)	3.22 (2.49)	2.37 (1.66)
DMQ-A	2.83 (0.61)	3.05 (0.44)	2.50 (1.43)

Table 5

Family Classification Results based on the Stepwise Procedure

	Classification Groups		
	Prepubertal	Transpubertal	Postpubertal
Predicted Number of Families in Group	1	27	7
Actual Number of Families in Group	6	29	15
Percentage of Families Correctly Classified	16.7%	93.1%	46.7%
Overall Percentage of Families Correctly Classified		70.0%	

Table 6

Family Classification Results based upon Entire Assessment Battery of Instruments and their Derived Variables

	Classification Group		
	Prepubertal	Transpubertal	Postpubertal
Predicted Number of Families in Group	3	27	13
Actual Number of Families in Group	6	29	15
Percentage of Families Correctly Classified	50%	93.1%	86.7%
Overall Percentage of Families Correctly Classified		86.0%	